

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1-4. (Cancelled)

5. (Currently Amended) A semiconductor chip comprising:

a semiconductor substrate;

an integrated circuit, at least a part of the integrated circuit being formed in the semiconductor substrate;

a penetrating electrode which is formed in a through-hole of the semiconductor substrate from a first surface to a second surface of the semiconductor substrate, the through-hole having sidewalls entirely orthogonal to the first and second surface, and ~~has the penetrating electrode having~~ a projection which projects from the second surface; and

an insulating layer formed over an entire surface of the second surface of the substrate, ~~wherein the insulating layer includes~~ including a first insulating section formed in a region that surrounds~~around~~ the projection such that the projection forms a through-bore in the first insulating section above the second surface of the substrate, and a second insulating section that covers a remaining region of the second surface of the semiconductor substrate~~other than the first insulating section,~~ the first insulating section being connected to the second insulating section by a radially tapering arcuate

portion having a varying radius of curvature from the through-bore to the second insulating section; and

wherein the second insulating section is formed to be thinner than a thickest area of the first insulating section.

6. (Original) The semiconductor chip as defined in claim 5, wherein the first insulating section is formed so that a thickness of the first insulating section decreases as a distance from the projection increases.

7. (Original) The semiconductor chip as defined in claim 5, wherein the projection is formed to have a height higher than a height of a thickest area of the insulating layer.

8. (Original) The semiconductor chip as defined in claim 5, wherein the projection is formed to have a height equal to a height of a thickest area of the insulating layer.

9-18. (Cancelled)

19. (Currently Amended) A semiconductor wafer comprising:
a semiconductor substrate;
a plurality of integrated circuits, at least a part of each of the integrated circuits being formed in the semiconductor substrate;

a plurality of penetrating electrodes, each of the penetrating electrodes being formed in through-holes of the semiconductor substrate from a first surface to a second surface of the semiconductor substrate, the through-holes having sidewalls entirely orthogonal to the first and second surface, and the penetrating electrodes each having a projection which projects from the second surface; and

an insulating layer formed over an entire surface of the second surface of the substrate, ~~wherein~~ the insulating layer including ~~includes~~ a plurality of first insulating sections and a second insulating section other than the first insulating sections, each of the first insulating sections being formed in ~~a regions~~ that around ~~surround~~ the projections above the second surface of the substrate such that the projections define through-bores in the first insulating sections, and the second insulating section covering a remaining region of the second surface of the semiconductor substrate, the first insulating sections being connected to the second insulating section by radially tapering arcuate portions having a varying radius of curvature from the through-bore to the second insulating section; ~~and~~

wherein the second insulating section is formed to be thinner than a thickest area of each of the first insulating sections.

20. (Original) The semiconductor wafer as defined in claim 19, wherein each of the first insulating sections is formed so that a thickness of each of the first insulating sections decreases as a distance from the projection increases.

21. (Original) The semiconductor wafer as defined in claim 19, wherein the projection is formed to have a height higher than a height of a thickest area of the insulating layer.

22. (Original) The semiconductor wafer as defined in claim 19, wherein the projection is formed to have a height equal to a height of a thickest area of the insulating layer.

23-33. (Cancelled)

34. (Original) A circuit board on which the semiconductor chip as defined in claim 5 is mounted.

35-41. (Cancelled)

42. (Original) An electronic instrument comprising the semiconductor chip as defined in claim 5.

43-70. (Cancelled)